

**Report from the Molecular Epidemiology Section of the Dept. of Exotic Disease Control to
the Head of the World Reference Laboratory for FMD (Non-QAU Form)**

Serotype: O	Report date: 18/03/2004						
WRL Ref No: BHU/9/2003							
Date collected: 07/07/2003							
Date received: 04/12/2003	Topotype: ME-SA						
Species: Cattle	Genotype/strain: PanAsia						
Material used: BTy1	Sequence filename: BHU03-09.SEQ						
Region sequenced: VP1	Date sequence last updated: 18/03/2004						
RT-PCR primers: O-1C244F/NK61	Total no. of comparisons: 1388						
No. of Nt determined: 617							
No. of ambiguities: 2							
Gene length: 639							
Comments:							
Ten Most Closely Related Viruses							
Pos.	Virus name	Filename	No. nt compared	No. nt matched	No. of ambiguities	% Identity	% Difference
1	O/BHU/41/2003	BHU03-41	614	610	5	99.35	0.65
2	O/NEP/2/2003	NEP03-02	616	607	3	98.54	1.46
3	O/NEP/4/2003	NEP03-04	617	606	2	98.22	1.78
4	O/NEP/6/2003	NEP03-06	617	606	2	98.22	1.78
5	O/BHU/15/2003	BHU03-15	617	605	2	98.06	1.94
6	O/BHU/14/2003	BHU03-14	602	590	1	98.01	1.99
7	O/MAY/2/2004	MAY04-02	587	574	1	97.79	2.21
8	O/MAY/3/2004	MAY04-03	585	571	1	97.61	2.39
9	O/NEP/5/2003	NEP03-05	617	601	2	97.41	2.59
10	O/MAY/6/2003	MAY03-06	617	599	2	97.08	2.92
Relationships to Reference Virus Strains							
Pos.	Virus name	Filename	No. nt compared	No. nt matched	No. of ambiguities	% Identity	% Difference
1	O/TAW/2/99	TAW99-02	617	586	2	94.98	5.02
2	O/IND/53/79	IND79A53	617	555	2	89.95	10.05
3	O/IND/R2/75*	IND75--A	617	547	2	88.65	11.35
4	O1/Manisa/TUR/69	TUR69--E	617	547	2	88.65	11.35
5	O/TAI/189/87*	TAI87-AC	617	532	2	86.22	13.78
6	O/ISR/1/88	ISR88-01	192	164	6	85.42	14.58
7	O/MOR/1/91	MOR91-01	206	175	4	84.95	15.05
8	O/PHI/5/95	PHI95-05	515	414	7	80.39	19.61
9	O/HKN/6/83	HKN83-06	615	490	4	79.67	20.33
10	O1/BFS 1860/UK/67	UKG67--A	617	488	2	79.09	20.91
nt, nucleotides							
*, not a WRLFMD reference number							

**Report from the Molecular Epidemiology Section of the Dept. of Exotic Disease Control to
the Head of the World Reference Laboratory for FMD (Non-QAU Form)**

Serotype: O		Report date: 18/03/2004					
WRL Ref No: BHU/14/2003							
Date collected: 06/08/2003							
Date received: 04/12/2003		Topotype: ME-SA					
Species: Cattle		Genotype/strain: PanAsia					
Material used: BTy1		Sequence filename: BHU03-14.SEQ					
Region sequenced: VP1		Date sequence last updated: 18/03/2004					
RT-PCR primers: O-1C244F/NK61		Total no. of comparisons: 1388					
No. of Nt determined: 623							
No. of ambiguities: 0							
Gene length: 639							
Comments:							
Ten Most Closely Related Viruses							
Pos.	Virus name	Filename	No. nt compared	No. nt matched	No. of ambiguities	% Identity	% Difference
1	O/NEP/6/2003	NEP03-06	623	618	0	99.20	0.80
2	O/NEP/2/2003	NEP03-02	622	617	1	99.20	0.80
3	O/BHU/15/2003	BHU03-15	622	616	1	99.04	0.96
4	O/MAY/2/2004	MAY04-02	594	585	0	98.48	1.52
5	O/NEP/5/2003	NEP03-05	623	613	0	98.39	1.61
6	O/NEP/4/2003	NEP03-04	623	613	0	98.39	1.61
7	O/BHU/41/2003	BHU03-41	622	612	1	98.39	1.61
8	O/MAY/3/2004	MAY04-03	594	584	0	98.32	1.68
9	O/BHU/9/2003	BHU03-09	602	590	1	98.01	1.99
10	O/MAY/6/2003	MAY03-06	623	609	0	97.75	2.25
Relationships to Reference Virus Strains							
Pos.	Virus name	Filename	No. nt compared	No. nt matched	No. of ambiguities	% Identity	% Difference
1	O/TAW/2/99	TAW99-02	623	593	0	95.18	4.82
2	O/IND/53/79	IND79A53	623	557	0	89.41	10.59
3	O/IND/R2/75*	IND75--A	623	553	0	88.76	11.24
4	O1/Manisa/TUR/69	TUR69--E	623	550	0	88.28	11.72
5	O/TAI/189/87*	TAI87-AC	623	542	0	87.00	13.00
6	O/ISR/1/88	ISR88-01	177	153	5	86.44	13.56
7	O/MOR/1/91	MOR91-01	191	164	3	85.86	14.14
8	O/PHI/5/95	PHI95-05	500	403	6	80.60	19.40
9	O/HKN/6/83	HKN83-06	621	497	2	80.03	19.97
10	O1/BFS 1860/UK/67	UKG67--A	623	492	0	78.97	21.03
nt, nucleotides							
*, not a WRLFMD reference number							

**Report from the Molecular Epidemiology Section of the Dept. of Exotic Disease Control to
the Head of the World Reference Laboratory for FMD (Non-QAU Form)**

Serotype: O	Report date: 18/03/2004						
WRL Ref No: BHU/15/2003							
Date collected: 06/08/2003							
Date received: 04/12/2003	Topotype: ME-SA						
Species: Cattle	Genotype/strain: PanAsia						
Material used: BTy1	Sequence filename: BHU03-15.SEQ						
Region sequenced: VP1	Date sequence last updated: 18/03/2004						
RT-PCR primers: O-1C244F/NK61	Total no. of comparisons: 1388						
No. of Nt determined: 638							
No. of ambiguities: 1							
Gene length: 639							
Comments:							
Ten Most Closely Related Viruses							
Pos.	Virus name	Filename	No. nt compared	No. nt matched	No. of ambiguities	% Identity	% Difference
1	O/NEP/2/2003	NEP03-02	637	632	2	99.22	0.78
2	O/NEP/6/2003	NEP03-06	638	632	1	99.06	0.94
3	O/BHU/14/2003	BHU03-14	622	616	1	99.04	0.96
4	O/MAY/2/2004	MAY04-02	607	597	1	98.35	1.65
5	O/NEP/5/2003	NEP03-05	638	627	1	98.28	1.72
6	O/NEP/4/2003	NEP03-04	638	627	1	98.28	1.72
7	O/BHU/41/2003	BHU03-41	634	623	5	98.26	1.74
8	O/MAY/3/2004	MAY04-03	605	594	1	98.18	1.82
9	O/BHU/9/2003	BHU03-09	617	605	2	98.06	1.94
10	O/MAY/6/2003	MAY03-06	638	623	1	97.65	2.35
Relationships to Reference Virus Strains							
Pos.	Virus name	Filename	No. nt compared	No. nt matched	No. of ambiguities	% Identity	% Difference
1	O/TAW/2/99	TAW99-02	638	606	1	94.98	5.02
2	O/IND/53/79	IND79A53	638	572	1	89.66	10.34
3	O/IND/R2/75*	IND75--A	638	565	1	88.56	11.44
4	O1/Manisa/TUR/69	TUR69--E	638	563	1	88.24	11.76
5	O/ISR/1/88	ISR88-01	193	167	5	86.53	13.47
6	O/TAI/189/87*	TAI87-AC	638	551	1	86.36	13.64
7	O/MOR/1/91	MOR91-01	207	178	3	85.99	14.01
8	O/PHI/5/95	PHI95-05	516	417	6	80.81	19.19
9	O/HKN/6/83	HKN83-06	636	511	3	80.35	19.65
10	O1/BFS 1860/UK/67	UKG67--A	638	507	1	79.47	20.53
nt, nucleotides							
*, not a WRLFMD reference number							

**Report from the Molecular Epidemiology Section of the Dept. of Exotic Disease Control to
the Head of the World Reference Laboratory for FMD (Non-QAU Form)**

Serotype: O		Report date: 18/03/2004					
WRL Ref No: BHU/22/2003							
Date collected: 16/08/2003							
Date received: 04/12/2003		Topotype: ME-SA					
Species: Cattle		Genotype/strain: PanAsia					
Material used: BTy1		Sequence filename: BHU03-22.SEQ					
Region sequenced: VP1		Date sequence last updated: 18/03/2004					
RT-PCR primers: O-1C244F/NK61		Total no. of comparisons: 1388					
No. of Nt determined: 639							
No. of ambiguities: 0							
Gene length: 639							
Comments:							
Ten Most Closely Related Viruses							
Pos.	Virus name	Filename	No. nt compared	No. nt matched	No. of ambiguities	% Identity	% Difference
1	O/BHU/24/2003	BHU03-24	639	638	0	99.84	0.16
2	O/BHU/25/2003	BHU03-25	639	636	0	99.53	0.47
3	O/IND/153/99*	IND99-AE	165	163	0	98.79	1.21
4	O/IND/81/99* (1998)	IND98-AO	165	163	0	98.79	1.21
5	O/IND/210/99* (1998)	IND98-AV	165	163	0	98.79	1.21
6	O/IND/61/97* (1996)	IND96-AB	165	163	0	98.79	1.21
7	O/IND/209/99* (1998)	IND98-AU	165	163	0	98.79	1.21
8	O/IND/289/97*	IND97-AW	165	163	0	98.79	1.21
9	O/IND/160/99*	IND99-AF	209	206	1	98.56	1.44
10	O/IND/57/98*	IND98-AD	165	162	0	98.18	1.82
Relationships to Reference Virus Strains							
Pos.	Virus name	Filename	No. nt compared	No. nt matched	No. of ambiguities	% Identity	% Difference
1	O/TAW/2/99	TAW99-02	639	616	0	96.40	3.60
2	O1/Manisa/TUR/69	TUR69--E	639	577	0	90.30	9.70
3	O/IND/R2/75*	IND75--A	639	575	0	89.98	10.02
4	O/IND/53/79	IND79A53	639	571	0	89.36	10.64
5	O/TAI/189/87*	TAI87-AC	639	562	0	87.95	12.05
6	O/ISR/1/88	ISR88-01	193	168	5	87.05	12.95
7	O/MOR/1/91	MOR91-01	207	180	3	86.96	13.04
8	O/HKN/6/83	HKN83-06	637	525	2	82.42	17.58
9	O/PHI/5/95	PHI95-05	516	423	6	81.98	18.02
10	O1/BFS 1860/UK/67	UKG67--A	639	516	0	80.75	19.25
nt, nucleotides							
*, not a WRLFMD reference number							

**Report from the Molecular Epidemiology Section of the Dept. of Exotic Disease Control to
the Head of the World Reference Laboratory for FMD (Non-QAU Form)**

Serotype: O	Report date: 18/03/2004						
WRL Ref No: BHU/24/2003							
Date collected: 16/08/2003							
Date received: 04/12/2003	Topotype: ME-SA						
Species: Cattle	Genotype/strain: PanAsia						
Material used: BTy1	Sequence filename: BHU03-24.SEQ						
Region sequenced: VP1	Date sequence last updated: 18/03/2004						
RT-PCR primers: O-1C244F/NK61	Total no. of comparisons: 1388						
No. of Nt determined: 639							
No. of ambiguities: 0							
Gene length: 639							
Comments:							
Ten Most Closely Related Viruses							
Pos.	Virus name	Filename	No. nt compared	No. nt matched	No. of ambiguities	% Identity	% Difference
1	O/BHU/22/2003	BHU03-22	639	638	0	99.84	0.16
2	O/BHU/25/2003	BHU03-25	639	637	0	99.69	0.31
3	O/IND/160/99*	IND99-AF	209	207	1	99.04	0.96
4	O/IND/153/99*	IND99-AE	165	163	0	98.79	1.21
5	O/IND/210/99* (1998)	IND98-AV	165	163	0	98.79	1.21
6	O/IND/61/97* (1996)	IND96-AB	165	163	0	98.79	1.21
7	O/IND/209/99* (1998)	IND98-AU	165	163	0	98.79	1.21
8	O/IND/289/97*	IND97-AW	165	163	0	98.79	1.21
9	O/IND/81/99* (1998)	IND98-AO	165	163	0	98.79	1.21
10	O/IND/307/98*	IND98-AJ	182	179	1	98.35	1.65
Relationships to Reference Virus Strains							
Pos.	Virus name	Filename	No. nt compared	No. nt matched	No. of ambiguities	% Identity	% Difference
1	O/TAW/2/99	TAW99-02	639	617	0	96.56	3.44
2	O1/Manisa/TUR/69	TUR69--E	639	576	0	90.14	9.86
3	O/IND/R2/75*	IND75--A	639	574	0	89.83	10.17
4	O/IND/53/79	IND79A53	639	572	0	89.51	10.49
5	O/TAI/189/87*	TAI87-AC	639	561	0	87.79	12.21
6	O/ISR/1/88	ISR88-01	193	167	5	86.53	13.47
7	O/MOR/1/91	MOR91-01	207	179	3	86.47	13.53
8	O/HKN/6/83	HKN83-06	637	526	2	82.57	17.43
9	O/PHI/5/95	PHI95-05	516	424	6	82.17	17.83
10	O1/BFS 1860/UK/67	UKG67--A	639	517	0	80.91	19.09
nt, nucleotides							
*, not a WRLFMD reference number							

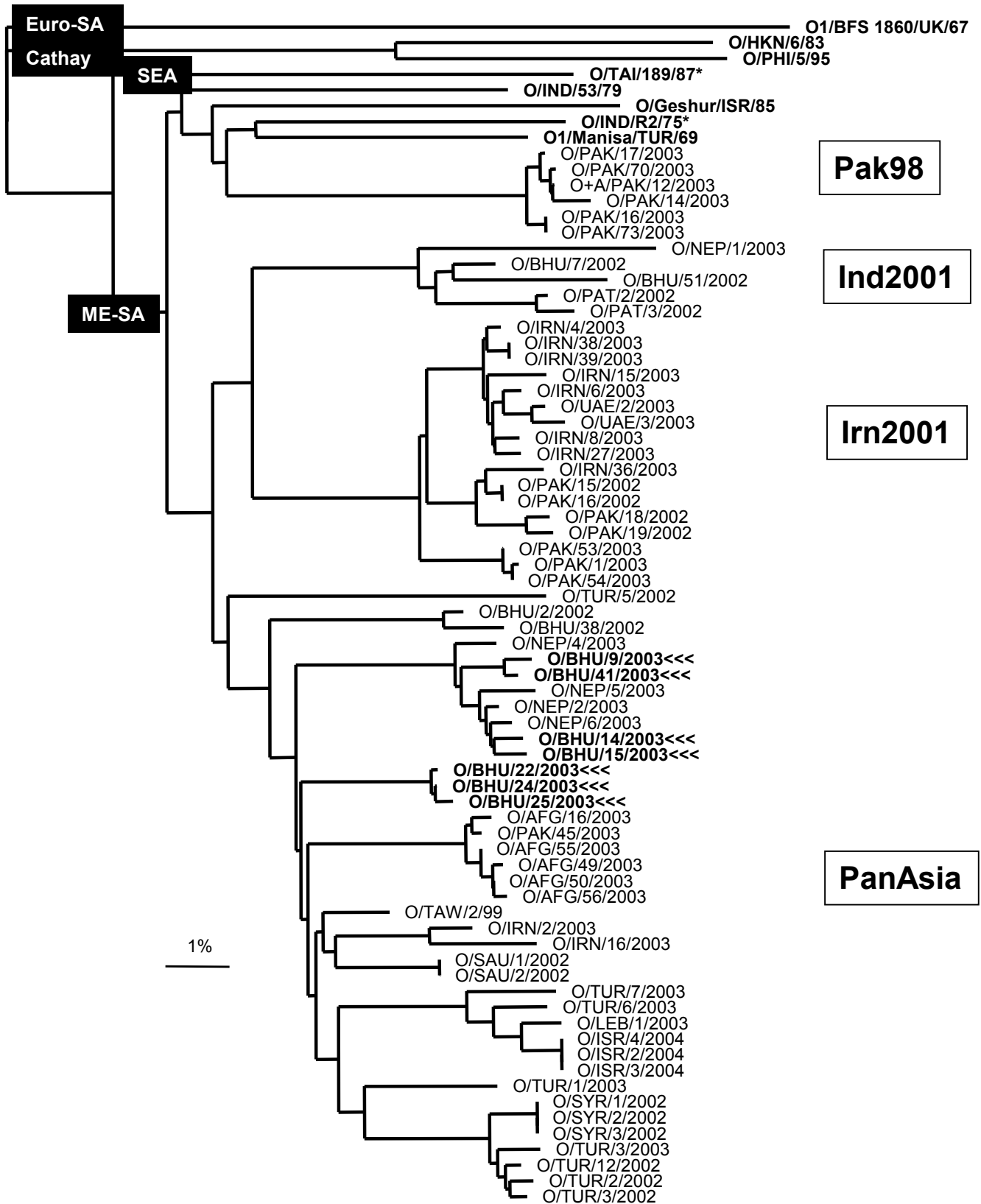
**Report from the Molecular Epidemiology Section of the Dept. of Exotic Disease Control to
the Head of the World Reference Laboratory for FMD (Non-QAU Form)**

Serotype: O		Report date: 18/03/2004					
WRL Ref No: BHU/25/2003							
Date collected: 16/08/2003							
Date received: 04/12/2003		Topotype: ME-SA					
Species: Cattle		Genotype/strain: PanAsia					
Material used: BTy1		Sequence filename: BHU03-25.SEQ					
Region sequenced: VP1		Date sequence last updated: 18/03/2004					
RT-PCR primers: O-1C244F/NK61		Total no. of comparisons: 1388					
No. of Nt determined: 639							
No. of ambiguities: 0							
Gene length: 639							
Comments:							
Ten Most Closely Related Viruses							
Pos.	Virus name	Filename	No. nt compared	No. nt matched	No. of ambiguities	% Identity	% Difference
1	O/BHU/24/2003	BHU03-24	639	637	0	99.69	0.31
2	O/BHU/22/2003	BHU03-22	639	636	0	99.53	0.47
3	O/IND/160/99*	IND99-AF	209	207	1	99.04	0.96
4	O/IND/153/99*	IND99-AE	165	163	0	98.79	1.21
5	O/IND/210/99* (1998)	IND98-AV	165	163	0	98.79	1.21
6	O/IND/61/97* (1996)	IND96-AB	165	163	0	98.79	1.21
7	O/IND/209/99* (1998)	IND98-AU	165	163	0	98.79	1.21
8	O/IND/289/97*	IND97-AW	165	163	0	98.79	1.21
9	O/IND/81/99* (1998)	IND98-AO	165	163	0	98.79	1.21
10	O/IND/307/98*	IND98-AJ	182	179	1	98.35	1.65
Relationships to Reference Virus Strains							
Pos.	Virus name	Filename	No. nt compared	No. nt matched	No. of ambiguities	% Identity	% Difference
1	O/TAW/2/99	TAW99-02	639	615	0	96.24	3.76
2	O1/Manisa/TUR/69	TUR69--E	639	574	0	89.83	10.17
3	O/IND/R2/75*	IND75--A	639	572	0	89.51	10.49
4	O/IND/53/79	IND79A53	639	570	0	89.20	10.80
5	O/TAI/189/87*	TAI87-AC	639	559	0	87.48	12.52
6	O/ISR/1/88	ISR88-01	193	167	5	86.53	13.47
7	O/MOR/1/91	MOR91-01	207	179	3	86.47	13.53
8	O/HKN/6/83	HKN83-06	637	526	2	82.57	17.43
9	O/PHI/5/95	PHI95-05	516	424	6	82.17	17.83
10	O1/BFS 1860/UK/67	UKG67--A	639	519	0	81.22	18.78
nt, nucleotides							
*, not a WRLFMD reference number							

**Report from the Molecular Epidemiology Section of the Dept. of Exotic Disease Control to
the Head of the World Reference Laboratory for FMD (Non-QAU Form)**

Serotype: O	Report date: 18/03/2004						
WRL Ref No: BHU/41/2003							
Date collected: 20/10/2003							
Date received: 04/12/2003							
Species: Cattle	Topotype: ME-SA						
Material used: BTy1	Genotype/strain: PanAsia						
Region sequenced: VP1	Sequence filename: BHU03-41.SEQ						
RT-PCR primers: O-1C244F/NK61	Date sequence last updated: 18/03/2004						
No. of Nt determined: 635	Total no. of comparisons: 1388						
No. of ambiguities: 4							
Gene length: 639							
Comments:							
Ten Most Closely Related Viruses							
Pos.	Virus name	Filename	No. nt compared	No. nt matched	No. of ambiguities	% Identity	% Difference
1	O/BHU/9/2003	BHU03-09	614	610	5	99.35	0.65
2	O/NEP/2/2003	NEP03-02	634	627	5	98.90	1.10
3	O/NEP/6/2003	NEP03-06	635	626	4	98.58	1.42
4	O/NEP/4/2003	NEP03-04	635	625	4	98.43	1.57
5	O/BHU/14/2003	BHU03-14	622	612	1	98.39	1.61
6	O/BHU/15/2003	BHU03-15	634	623	5	98.26	1.74
7	O/MAY/2/2004	MAY04-02	607	596	1	98.19	1.81
8	O/MAY/3/2004	MAY04-03	606	594	0	98.02	1.98
9	O/NEP/5/2003	NEP03-05	635	621	4	97.80	2.20
10	O/MAY/6/2003	MAY03-06	635	620	4	97.64	2.36
Relationships to Reference Virus Strains							
Pos.	Virus name	Filename	No. nt compared	No. nt matched	No. of ambiguities	% Identity	% Difference
1	O/TAW/2/99	TAW99-02	635	605	4	95.28	4.72
2	O/IND/53/79	IND79A53	635	570	4	89.76	10.24
3	O/IND/R2/75*	IND75--A	635	566	4	89.13	10.87
4	O1/Manisa/TUR/69	TUR69--E	635	563	4	88.66	11.34
5	O/TAI/189/87*	TAI87-AC	635	553	4	87.09	12.91
6	O/ISR/1/88	ISR88-01	189	163	9	86.24	13.76
7	O/MOR/1/91	MOR91-01	203	174	7	85.71	14.29
8	O/PHI/5/95	PHI95-05	512	413	10	80.66	19.34
9	O/HKN/6/83	HKN83-06	633	507	6	80.09	19.91
10	O1/BFS 1860/UK/67	UKG67--A	635	501	4	78.90	21.10
nt, nucleotides							
*, not a WRLFMD reference number							

Report on: O BHUTAN 2003



Unrooted Neighbor-joining tree based on a comparison of the complete VP1 gene. The tree was outgroup-rooted using O1/BFS 1860/UK/67.